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'KOREA HERALD' ON JAPANESE INDUSTRIAL POLLUTION

Seoul THE KOREA HERALD in English 5 Mar 77 p 4 SK

[Editorial: "Import of Industrial Waste"]

[Text] Some 2,000 tons of obnoxious industrial oil waste imported from Japan, abandoned in open bonded areas of the Pusan customs office, is a glaring indication of how flimsy our consciousness of pollution is. It is even dismaying that the nation, and pollution-control authorities in particular, have come to recognize the influx of this highly pollutant material from Japan only after some Japanese lawmakers made an issue of the pollution export to Korea in the Lower House's budget committee.

Interim results of the probe, conducted by police and customs authorities on the heels of reports from Japan, show that the flow of industrial oil waste to Korea began in 1975 when a Pusan company first imported 83 tons from Japan. The latest shipment of waste oil involving 51 tons arrived at Incheon Port in January of this year, bringing to some 3,000 tons the aggregate of harmful waste imported into the country since 1975. The industrial waste materials laid out at the Pusan bonded areas are believed to be relatively late arrivals, and it is dismal to imagine what might have resulted from other waste oil that was cleared out of the customs warehouses.

The business ethics and pollution awareness of those who imported the harmful material from Japan are, of course, very questionable, but the authorities in charge of import licensing and customs clearance can hardly escape the public censure that they were not properly conscious of pollution hazards. Pollution is becoming an increasingly serious problem in Korea as the nation accelerates its industrialization endeavor. At a time when this country has already enough pollution factors to cope with, it is plainly ridiculous for it to import pollutants from other countries.

Those Japanese businessmen who attempted to turn their neighbor country into a junkyard for their industrial waste including oil, rubber, synthetic resins and paint are also culpable from the viewpoint of business

ethics and morality. But it is indeed shameful that the pertinent authorities were not aware of the continued influx of pollutant materials into the country over a period of 2 years.

One logical reason for their failure to prevent the entry of such industrial waste into the country was likely to be their insufficient knowledge about the far-reaching horrible effects of pollution on our lives, living environment and natural environment. Reports from Pusan already indicate that trickles of red black liquid with a vicious stench are flowing into the sea from the open bonded warehouse areas where the imported industrial waste is contained in hemp and straw bags. This waste is now actually polluting the waters off Pusan Port, and disposal has become an urgent problem.

It will incur additional cost to dispose of industrial waste imported from Japan through regular international trade transactions. Apparently, Korean importers of the industrial waste were nicely tricked by those Japanese businessmen who found a way of disposing of waste oil at a very cheap cost. The local importers who could not find any use for the imported waste simply vanished when they found they could not get the waste out of the customs warehouse. Under no circumstances can the nation afford to repeat a mistake of this sort, and the case in question should serve as a strong-enough alarm to pollution hazards from within and without so as to preserve our land and environment from irreparable dilapidation.

CSO: 5000

VIETNAM

ENVIRONMENTAL PROTECTION RECEIVES RENEWED EMPHASIS

Hanoi TAP CHI HOAT DONG KHOA HOC in Vietnamese No 1, Jan 77 pp 39-44

[Article by Dang Huy Huynh: "Considerations on Environmental Protection"]

[Excerpts] The relationship between man and the natural environment has become one of the crucial problems of our era. The evolutionary history of society has shown the extremely great harmful results of unorganized and inconsiderate exploitation and utilization of natural resources inconsistent with the basic development laws of nature.

According to preliminary statistics in northern Vietnam, 45 percent of our precious forested area has and is becoming bare. Approximately 29 percent of the forested area has been exhausted. Worthy of attention is that nearly all forested areas in the lowlands near industrial centers and along land and water routes have been seriously depleted. The primary cause of forest destruction is the war of aggression waged by the U.S. imperialists for the past 20 years. From February 1965 to 30 September 1972 alone, the amount of munitions dropped by the United States on our country reached 7,855,000 tons. Napalm bombs alone from January 1969 to January 1971 reached 201,239 tons. Even more brutal, the United States used chemical poisons on southern Vietnam on a large scale, creating extremely serious harm to the environment, from 1961 to 1964 destroying up to 13,000 square kilometers of farmland in southern Vietnam. In the newly created forested land of southern Vietnam, cradle of many kinds of plants and animals, 25,000 square kilometers were destroyed, more than 39 percent totally destroyed by chemical poisons; including substances such as pichloran, not only having an immediate but also a long term effect on the world of living things.

The operation of transportation means and factories is polluting the environment in a concerning manner, one passenger automobile operating 1 hour discharging about 5 cubic meters of dust into the atmosphere, not mentioning the noise of various kinds of vehicles which can disturb circulation, excretion and nervous. In our country, although the system of large factories is not great to this time, the problem of environmental pollution causes us to deliberate, for example when a preliminary recording is made of industrial dust from the Haiphong Cement Plant as follows:

At the Vietnam-Czechoslovakia Hospital (1 kilometer from the plant), the dust volume reached 1.185 grams per square meter during a period of 1 month; also in this same hospital area but 2.5 kilometers from the plant, the dust was measured for 1 month at 3.555 grams per square meter, and in the Thuong Ly area (.5 kilometers from the plant), the dust reached 4.65 grams per square meter monthly. In Hanoi during the summer and fall of 1969-1970, dust on the main streets was 36.6 grams per square meter per month, in the Cua Bac area, 35.28 grams per square meter per month and in the Quan Thanh area, 9.5 grams per square meter. At the present time in major industrial areas such as Thai Nguyen, Viet Tri, Cam Pha, Vinh, Da Nang, Ho Chi Minh City, etc., the volume of dust in the atmosphere also reaches a fairly high level.

It is also necessary to emphasize that forests play a large role in halting flood waters from flowing down from the mountains to destroy houses, villages and fields. As we know, because forest trees reduce the speed of the current, the water flows down from the mountains to the streams and rivers with sufficient time to disperse in small branches. Thanks to decomposed leaves in the forest, the roots cause the water to be absorbed deep within the earth instead of flowing at a rapid rate to erode and wash away the fertility of surface earth layers. Thanks to the shade of trees and the moisture of the ground, the climate in mountainous areas is usually cool and comfortable; at the same time, the forest is also a wall firmly blocking the wind from damaging crops. In our coastal areas, we plant forests to block sand. Without the tree screen, sand would gradually move deep into the mainland with an adverse effect on farmland and roads.

Socialist construction on a nationwide scale, industrial and agricultural development and the rapid change of technology along with expansion of new economic areas are multifaceted requirements of the people intimately related with the exploitation and use of natural resources such as the resources of forestry, marine products, precious minerals, etc. Environmental protection has an especially great significance, the organization and establishment of an exploitation system to assure truly rational utilization, restoration and protection of resources, converting them into a gigantic factory eternally supporting socialist construction. Effective environmental protection will play an important role in every area and will not be limited to the economic activity of man. Environmental protection at this time is a great economic and social problem because it supports the protection and further increase of material goods, a raised standard of living for the people, restoration of health and satisfaction of cultural and esthetic requirements of man.

Concerning our country, environmental protection in our opinion must first of all give concentrated attention to the following items:

1. Assure the rational utilization of natural resources.
2. Protect the animal and plant world.
3. Protect sources of drinking water against pollution.

4. Protect the atmosphere.

5. Protect and improve the natural surroundings.

Assure Rational Utilization of Natural Resources

The natural resources are rich and diversified; valuable lumber and mineral reserves and various kinds of plants and animals bear many of the unique characteristics of a tropical zone. As a valuable asset of the Fatherland, we do not have the right to use them in a wasteful manner and must realize that natural resources belong to all the people. By creative labor, we must know how to convert these natural resources into competently supporting socialist construction.

Therefore, the application of methods to exploit natural resources to assure their best utilization with the purpose of satisfying the requirements of man is a great mission.

To achieve this goal, we must first of all conduct a basic investigation to firmly ascertain the natural conditions, distribution, reserve density and resources of each area, estimate and fix a truly rational exploitation rate aimed at conserving the resource assets of the Fatherland, and immediately halt indiscriminate exploitation which could lead to a condition of stripping large land areas with the immediate consequences of: the climate turning bad, ponds and lakes drying up, water levels dropping, and erosion and landslides causing floods.

At the present time, the policy of land clearing and reclamation, expansion of new economic areas and increasing farming area has an important significance to the agriculture of our nation but when implementing the expansion of farming area, we should not forget to protect the land and must boldly apply advanced scientific methods aimed at preventing erosion in each setting, especially in the midlands and highlands, aimed at protecting land for farming and stock raising.

Protect Animal Resources

Wild animals since ancient times have been an important source of life for mankind with such things as meat, leather, feathers, ivory, horns, bones and claws to make art objects which are esteemed by many nations throughout the world; valuable forest products may be exported to obtain machinery or foreign exchange, bear gall, musk and anteater scales to make treatment drugs, etc. Moreover, wild animals are also an oven producing domestic animals and poultry which man has the ability to train into tame animals such as huoi sao, bears, golden monkeys, mynah birds, orioles, etc.

For about 100 years, the forest birds of the world and of our nation have been severely depleted. The cause of this depletion is first of all the rule of the French colonialists and the Japanese fascists. They plundered

the resources of our nation to take back and enrich the capitalists. Before that, Indochina was considered a paradise for hunters. Now, the brutal war waged by the American imperialists has reduced or destroyed this resource of ours. Therefore, the problem of protecting the animal resources of the Fatherland is an urgent problem requiring the proper level of concern.

Protecting Water Sources

Water is also part of the resources with which nature favored us; water is also an essential biological requirement. It has contributed to creation of life on earth. To man, water has many uses and mankind presently uses about 3,000 cubic kilometers of fresh water per year. In large cities, each inhabitant needs an average of about 300 to 600 liters per day. In order to answer this requirement, specialized agencies and water plants should plan to establish a water supply system assuring every activity of the people while simultaneously formulating methods of inspecting water quality to maintain sanitation and avoid drinking water source pollution. Besides the essential daily requirements, water can be used for many things in industry, including the use of large amounts of water, especially by textile, paper, dyeing, leather tanning, steel, refinery, etc. mills. In the United States, a steel mill uses on the average of about 15 billion liters of water per day, equal to one-half of the water required daily for the 8 million citizens of New York City. The production of 1 ton of paper requires 400,000 liters of water.

Mankind uses water as a means of transportation. At the present time, although there are advanced means of transportation such as trains, automobiles, airplanes, etc., transportation by water is still the cheapest. Besides routes of transportation by sea, we have a crisscrossing system of rivers, canals, streams and creeks, especially in western Nam Bo. Because the work procedures of many populated areas presently obstruct the circulation of rivers and streams, there is no way out and the material discharged from plants and enterprises settles in river sections, rivers gradually become narrower and a danger to the health of people living in that area is created.

Water must be used in a manner to fully utilize all the capabilities of this inexhaustible resource while simultaneously not forgetting to use it in a rational manner. We cannot use water solely to satisfy a number of requirements such as hydroelectric projects, farmland water conservancy systems, etc. without giving concern to other requirements which are not lacking in importance such as those of daily activities, pisciculture development, etc.

Protecting the Atmosphere

Air is extremely important to life but many times, man himself has polluted it without concern.

We can recognize air pollution by dust and taste. However, there are also cases of toxic materials in air which we cannot feel.

Protecting Natural Surroundings

Our country not only has many beautiful natural settings famous throughout the world such as Ha Long Bay, Huong Pagoda and the caves of Long Na and Ngu Hanh Son but also has many favorable locations for cadres and people to relax and recuperate such as Sam Son, Do Son, Nha Trang, Cam Ranh, Vung Tau, Tam Dao, Sa Pa, Da Lat, etc. Our country also has many historical vestiges recording the national pride and resolute struggle spirit of our ancestors from one era to another. The historical vestiges and natural surroundings are cultural projects requiring protection and restoration.

In expanding industrial centers at the central as well as the local level in conjunction with the construction of new cities, protection of natural surroundings as well as the original environment has an increasingly greater significance to culture and science. We must give attention to protecting the surroundings because their natural beauty has taken many years for nature to create and maintain. The surroundings and vestiges are interesting places to visit for every class of people. Recreational locations and beaches should be protected, maintained and cleared of pollution. The exploitation and transportation of sand and gravel for use in construction should avoid these areas. The construction of a green belt in locations short of trees as well as in areas where coal and all mineral products are mined has differing benefits. In actual practice at the present time, the population in many large cities of our nation such as Hanoi, Haiphong, Da Nang and Saigon is steadily increasing. This concentration leads to a crowded situation in cramped wards filled with the dust and noise of vehicles and machinery and the atmosphere is easily polluted. Therefore, the people in cities and industrial areas increasingly recognize the necessity for wholesome relaxation in natural surroundings. At the same time, these are locations of great benefit for youths and students to seek understanding of their rich and beautiful environment; and assisting natural and social scientists to understand the rich storehouse of the original environment.

Aimed at this goal, the government has established closed forested areas, areas for protecting natural resources and national parks favorable for the people's relaxation.

Environmental protection has an extremely great economic and social significance and is a broad problem demanding the participation of many scientific sectors and agencies with state jurisdiction. In our opinion, it is necessary to immediately promote the following matters:

1. Establish Environmental Protection Committees at the central and local levels.

At the present time, the country has been completely reunited. We will build a perfect economy aimed at developing the available potential of the Fatherland. Depending upon the sphere of one's assignment, responsibility should be assigned for the proper level of concern to the problem of environmental protection. In order to accomplish this task, the state must have an

agency to study, regulate and coordinate the activity of all sectors in order to develop the most beneficial and effective influence. This committee has the mission of outlining a plan to protect areas requiring protection, firmly administering environmental protection rules, propagandizing and educating the people in a concept of environmental protection, and rationally utilizing natural resources and must simultaneously formulate a plan assisting to restore and enrich the natural resources of the Fatherland.

2. All circles and schools must participate in environmental protection.

Actual practice has shown us that every activity and daily routine has an effect on the environment. Therefore, everyone in society without regard to trade, level, age, upstream or downstream and city or rural area can participate in environmental protection. In order to achieve this matter with high effectiveness, it must be formed in the deep subconsciousness of every class in society. We must especially rely on the young generation. Therefore, the concept of environmental protection must be formed immediately when one becomes the age of a youth and in order to accomplish this, levels I, II and III schools and colleges must give attention to educating the children, introducing environmental protection curricula into the teaching program at all levels. In the schools of a number of republics of the Soviet Union, a special part "Problems of Environmental Protection" is introduced to the curricula of the "Ocean Biology" subject, consisting of problems such as, "What harm will the pollution of bodies of water, the atmosphere and earth create?, The destruction of forests and its consequences, The effect of human activity on wild animals, Valuable and rare animals and plants which are becoming extinct, etc. Colleges should teach specific topics on environmental protection while simultaneously coordinating in propagandizing a concept of environmental protection immediately in the general teaching curricula by introducing it to textbooks, by multicolored illustrations, films, newspapers, etc.

3. Confirm the responsibility and role of science in environmental protection.

The unity between science and actual practice is extremely important for improving environmental protection. It is necessary here to recognize that the mission of scientific sectors is to competently support the crucial requirements of man in support of economic development and restoration. Science must promptly discover areas of concentrated pollution, study the composition and quantity of pollutants and their effect on the natural resources, discover natural resources being gradually lost and their crises, etc. Through this, superior methods must be found with the purpose of limiting and taking precautions against environmental pollution or finding methods of overcoming the problem. In order to accomplish this task, the role of the scientific research sector is indispensable. For example, the role of scientific research agencies is related to the problem of environmental protection and must assist the state in accurately explaining the development of industry and agriculture in our overall economy as well as the population increase within the country, etc., what effect this has the natural resources and what methods can be used to protect, strengthen and enrich resources for the Fatherland.

With our steadily developing industry, we must creatively apply advanced technology in developing the national economy. For this reason, an urgent requirement is to study all economic activity, especially the activity of man, as if a biogeographic factor. This is because man himself has introduced to the economy a great many different materials, processing them and mixing them with the final location of consumption, the very space in which we live. Therefore, a fundamental problem is to find a way to exploit and utilize natural resources which leads to the expenditure of few raw materials in the utilization process and the reduction of production refuse released into the environment.

In implementing methods of environmental protection, it is necessary to study nature as a unified body. Scientific work in this area must be organized and constructed on the basis of studying all the continuing changes of nature. Specialized scientific agencies and colleges should give concern to studying this problem.

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BULGARIA

ENVIRONMENTAL PROTECTION OF DANUBE AND BLACK SEA

Sofia RABOTNICHESKO DELO in Bulgarian 5 Jan 77 p 2

[Editorial: "The Resources of the Black Sea and the Danube--For Today and the Future!"]

[Text] Environmental protection and the most ration use of natural resources constitute on the basic concerns of our nation, an indispensable part of the program of the BCP for the creation of a developed socialist society. This task is embodied in the decisions of the December Plenum of the CC BCP and the documents of the 11th Party Congress aimed at raising the people's standard of living. Brilliant examples of this are the "Basic Statutes on the Protection, Restoration and Improvement of the Environment in the Black Sea-Bulgarian Coast Territorial Complex" and the "Basic Statutes on the Protection Restoration and Improvement of the Environment in the Danube Territorial Complex," adopted a few days ago by the State Council of the Bulgarian Peoples Republic, chaired by Comrade Tudor Zhivkov.

We have many important state documents. In terms of their nature and significance they represent two large-scale, long-term, elaborated programs aimed at making our homeland more beautiful, more bounteous. This derives from the fact that the Black Sea and the Danube are major resources which nature has endowed our country with. They endow our country with the power and the name of a sea power.

In terms of beauty and brilliance, our Black Sea complexes rival the most renowned sea resorts in the world. From Shabla in the North to Akhtopol inthe South, along a length of hundreds of kilometers, everywhere along the picturesque coast the people's government is creating fine vacation facilities for the workers, many hotels and restaurants for foreign tourists, camp sites, and sports facilities. Warm sun, the clean curative waters and beaches, mountainous shorelines, and dunes--such marvelous beauty is spreading the fame of the Bulgarian Black Sea complexes throughout the world.

The Black Sea and the Danube represent an enormous source of economic wealth. A variety of flora and fauna live in the clean, deep waters. Some 1,520 species of animals, including 164 fish, and 600 types of plants inhabit the Black Sea. The sea is also, one might say, an enormous mine of energy, mineral, and chemical resources. But at present we are not taking everything from it. The Black Sea shelf holds especially great potential.

It would be difficult for us to imagine Bulgaria without the Danube. It carries 10 times more water than any other river in the country. Its role in the future will grow even more. The Danube and the South Bulgarian Canal will be the main arteries of a national water system. The river is also of great significance as an energy source and as a main waterway.

The BCP and all our people highly appreciate this wealth and exercise constant concern to protect it and multiply it for the sake of future generations. What has been done up to now? Considerable organizational, political, and economic work has been carried out. In Varna a directorate for maintaining the purity of the Black Sea waters has been formed and has launched useful initiatives. Petroleum-collectors and barriers have been installed in the harbor zone, also other navigable basins, equipped with chemical laboratories and appropriate technical gear by means of which to ensure that ships in the Varna and Burgas bays do not pollute the water. In accordance with a special program the BAN [Bulgarian Academy of Sciences] and scientific institutes in the USSR and other socialist countries are collaborating to investigate the condition of the Black Sea waters. A broad program has been worked out to modernize or build new plants designed to treat water coming from plants, farm complexes, and population centers along the Danube basin and a number of villages on the Black Sea.

All of this, of course, is fine and gratifying. It makes it possible for our nation to greet tourists proudly and offer them fine vacation facilities. At the same time, however, it will not do to assume self-satisfaction and compacency that everything necessary has been done and that there are no problems to be solved. On the contrary, considerable work remains to be done. In Varna and Burgas major enterprises have gone up: chemical and petrochemical industry, power engineering, and machine building. Seaports are constantly crowded with our own and foreign ships. Agroindustrial complexes are building large farm sections, city populations are increasing. The influx of vacationers is growing, more and more people are flocking to the sea. For the exploitation of the enormous water, energy, biological, mineral, and other resources and favorable climatic conditions, in the future as well, the two complexes are to be developed at a fast pace; their role will increase both as industrial and tourist zones. And this means that new energy and industrial facilities will be built, others will be expanded, remodeled, and modernized; vacation houses and hotels will be enlarged.

With such a scale of concentration of technology and people, there is a real danger of air, soil, and water pollution in the territorial complexes. And it is quite right that our people's government is taking timely, rapid, and efficacious steps, without waiting, so to speak, for the evil to come to the threshold before bolting the door. The task formulated by the 11th Party Congress is being effectively implemented--to achieve a complete turnaround in protecting the environment, to clean up damage, and to prevent new violations; to take the integrated approach to ensure, in the words of Marx, harmonious relations between society and nature. In order to improve and enrich the environment, to strengthen its economic, social, ecological, healthful, and other functions, the Basic Statutes call for the exercise of a program-goal and integrated approach, to create strict coordination between every authority and organization having to do with this problem, in order to take efficacious measures.

Plans call for the construction of a broad network of new, modern treatment plants, for the delivery of more navigational, technical, and chemical facilities, for industrial projects and livestock farms to be built on deserted or poorly-productive lands far from resort zones. Sand dunes, lush forests, unique local flora, rock formations, and other natural beauties constitute our substantial natural wealth. A number of landscape-planning measures are also called for with respect to their use. They are designed to improve and enrich the environment, to protect and replenish biological resources. Also of great importance to the development of economic domestic and foreign tourism are measures for the integrated use, protection, and improvement of resort and health resources, for increasing their social and economic effectiveness. Also mapped out are the tasks to be carried out by the planning organizations, scientific institutes, and various departments with regard to protecting villages and lands along the Danube from flooding, reducing damages to the land, preventing swamp formation and salinization of land sections along the rivers, and increasing fish resources.

All the tasks in the Basic Statutes are mutually interlinked just as processes in nature herself are interlinked. This integrated approach is carried out in the spirit of the requirements of the July Plenum of the CC BCP--not to resolve problems only from the standpoint of the interests of an individual enterprise or sector, but the interests of the entire national economy.

In the implementation of the Basic Statutes, the Council of Ministers will approve programs and measures for the rational use of natural resources and environmental protection in the two complexes, also the authority for the coordination of the activity of every department and organization that will be involved in the study and utilization of resources. Implementation of the Basic Statutes will be the responsibility of all state and economic bodies, local authorities of the national government, and all workers.

The Committee for Science, Technical Progress, and Higher Education, together with the Bulgarian Academy of Sciences Committee for Environmental Protection, has the responsibility of directing and supervising scientific-research and planning-design activities in order to concentrate the scientific potential on working out vital problems of great national-economy effect in accordance with the two programs.

The State Council's document accords an important place to our country's tasks in international cooperation to protect the Black Sea and the Danube from pollution, to enrich their resources. This will be Bulgaria's contribution toward implementation of the humanitarian goals of the European Conference on Security and Cooperation. Protection of the resources and purity of the Black Sea and the Danube, as well as rational use of them, can be achieved through the joint efforts of all the countries involved.

The two programs constitute one more convincing proof of the enormous possibilities and creative scope of the socialist structure. Only socialism can afford such a large-scale integrated approach in which to find convincing answers to cardinal problems of the relationships between society, man, and nature!

Our entire nation is making efforts, increasing labor discipline, and expanding competition to implement the decisions of the 11th Party Congress. The rational use of the enormous resources in the Black Sea and Danube complex is of great importance to the task of multiplying them. Especially important in this regard are the obligations of the Committee for Environmental Protection. Preventive supervision must be the main method in its work. But in cases where wise words do no help, laws will have to be enforced, and guilty parties will have to be held strictly accountable. The okrug BCP committees and the okrug people's councils in the areas along the Black Sea and the Danube are, so to speak, the stewards of these resources, and will have to show more initiative, to mobilize the efforts of labor collectives in enterprises and construction projects, the efforts of party, Fatherland Front, Komsomol, and trade union organizations to accomplish these vital tasks.

The Black Sea and the Danube represent enormous natural resources of the Peoples Republic of Bulgaria. Therefore, let us take care of them with more concern, with more love!

5003
CSO: 5000

BULGARIA

ANTI-POLLUTION MEASURES IN BLACK SEA, DANUBE RIVER URGED

Sofia ZEMEDEL'SKO ZNAME in Bulgarian 19 Feb 77 p 2

[Article by engineer Stamen Stamenov, deputy chairman of the Committee on Environmental Protection: "Irrevocable Duty of the Entire Society"]

[Text] The water basins of the Black Sea and the Danube represent invaluable wealth with which Bulgaria is blessed. They have played an exceptionally important role in the centuries' long history of our people. Their economic, social and ecological value will increase constantly especially during the stage of building a developed socialist society.

The BCP, the government as well as the entire nation value correctly this natural wealth, recognize the need for its rational use and preservation for the present and future generations. The task for environmental protection has been included in the decisions of the December Plenum as well as in the documents adopted by the 11th Congress of the BCP. This extraordinarily important task is an integral part of the party program for building developed socialism in Bulgaria.

During the intensified industrial, transport, and agricultural development in these areas, however, a considerable degree of environmental pollution, which is in violation of the existing environmental laws, is still allowed. Many industrial, transport, and agricultural enterprises did not build the required purification facilities in time while others are not taking the necessary steps for their correct utilization, which does not make for normal working conditions. There are still cases of massive discharge of polluted water and waste materials. As a result, for example, the flora and fauna in lake Vaya and lake Beloslav are seriously threatened with extinction.

The solution of the problems for the environmental protection of the Black Sea waters occupies the efforts of our state organs, the scientific-research institute and public organizations. In recent years we have passed several normative statutes, programs and resolutions, and allotted sufficient means for preserving the sea, lakes and coastal line. Orders No 307, 208 and 19 of the Council of Ministers aimed at eliminating the pollution in the Black Sea. Unfortunately not all planned measures were

implemented and some other were fulfilled with great delay. The allotted means were not used and the deadlines for completing the projects were extended without justification.

Keeping all this in mind the State Council prepared and adopted "basic provisions for protection, restoration, and improvement of the natural environment in the territorial complexes 'Black Sea-Bulgarian Coast' and 'Danube.'" These documents contain a well-founded evaluation of the state, prospects, and measures which should be taken to achieve a decisive turning point in the work of all state, economic, and social organizations for the protection, restoration and improvement of the natural environment and for the most correct and complex utilization of their resources. These two highly important documents are in fact two long-term and complex programs determining the main features of the governmental policy in the field of protecting the environment during the Seventh Five-Year Plan and until 1990.

The Black Sea shelf, the Bulgarian seacoast and the Danube River are sources of enormous biological, mineral, energy, and other resources which strengthen the economy of Bulgaria. The favorable climate, the typical and unique combination of beaches, dunes, characteristic echosystems--all this makes the Black Sea coast a first rate national and international resort and tourism region. This region will be developed even more intensively as a national and international tourism and vacation center, with the purpose of restoring the health of our people, of raising further their living standards, of further intensifying socialist integration and rapidly expanding international ties.

Bulgaria is one of the water-poorest countries not only in the Balkans but in all of Europe and the overcoming of the deficit in our water balance can hardly take place without the full utilization of the waters of the Danube. The future water-economic plans rely very much on their use for the development of industry and agriculture.

Keeping in mind the great importance of these two complexes for the socio-economic and cultural development of Bulgaria during the Seventh Five-Year Plan, the government secured organizational prerequisites for the realization of many undertakings which should guarantee the purifying of the sea waters around our seacoast, lakes, and rivers discharging into the Black Sea and the Danube, up to a level appropriate for the needs of the national economy and safe for their flora and fauna. In the Black Sea area alone there are plans to build and commission 30 purifying units at large industrial, transport and agricultural enterprises in the course of the five-year plan.

The large urban purification stations of Varna and Burgas will also be completed and put in operation. Specific measures have been taken against the pollution of the seawater caused by ocean-going vessels through the establishment of a specific service for maintaining the purity of the

seawaters. Also the program complying with the requirements of the International Conference of 1954 and its amendments of 1962 and 1969--to which Bulgaria is a party--is also in the process of implementation.

It is necessary, however, to make a decisive turn in the construction of purification facilities, in complying with the construction deadlines and in the upkeep and correct utilization of the existing purification facilities. There are still organizations and departments that are failing to do all they can for the timely solution of the problems of the preservation of the purity of the Black Sea and Danube waters.

In its attempts to fulfill the highly humane dictate of preserving the purity of the Black Sea and Danube waters, Bulgaria plays an active role in the preparation and adoption of international agreements by all Danubian and Black Sea countries for the preservation of the purity of the waters and the rational use of their riches. All Danubian countries are to meet in the near future in order to discuss and resolve the use of the waters of the Danube and their protection from pollution. The People's Republic of Bulgaria is especially interested in such decisions and in the signing of international agreements in this field. For, a non-coordinated use and pollution of the Danube waters will have serious consequences for the economies of the countries located in its lower part, including Bulgaria.

There is no doubt that the tasks contained in the two basic documents will be successfully fulfilled. This will be done on the basis of the full coordination of the research, planning, and exploitation activities of all organs and organizations as well as a result of the broad international cooperation, above all with the Soviet Union.

The committee for environmental protection at the Council of Ministers will render its full cooperation for the fulfillment of the tasks set by the major provisions on preservation, restoration, and improvement of the environment in the territorial complexes "Black Sea--Bulgarian coast" and "Danube."

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CSO: 5000

EFFECT OF INDUSTRIAL POLLUTION ON CROPS OUTLINED

Sofia KOOPERATIVNO SELO in Bulgarian 27 Feb 77 p 2

[Article by Khristo Stoychev, chief agronomist of the PAK in Devnya: "We Are Expecting Help From Science"]

[Text] On the territory of the Druzhba [Friendship] Industrial-Agrarian Complex [PAK] in the town of Devnya, are concentrated extensive chemical and other industrial production. The gases, vapors, smoke and dust released by them have a bad effect on the soil structure, the soil absorptive complex, its acidity, and its composition. All of this reduces the soil fertility.

Dust, along with air and water, is one of the basic factors which influence the physiological processes of plants. The contamination of the soil with solid industrial and household wastes has been a major problem in the Devnya Lowlands. There is a similar situation with the water which is used for irrigation after leaving the purification plant and the filling of the Trushtikovo Reservoir.

These generally speaking are the additional factors which effect agricultural production in the region of the Devnya Lowlands.

If an analysis is made of the fulfillment of total and net product, as well as the average yields in crop raising and average productivity in animal husbandry over the last 5-6 years for the former cooperative farm in the town of Devnya, it can be seen that the results to a varying degree have been inconsistent, and usually are below average for the PAK. We do not feel that all of this is due to just the influence of the contaminated air and soil, but it is true that a significant portion is due to this.

It has been established that 58 days of the year are hazy in the region of the Devnya Lowlands in comparison with only 30 days for the remaining portion of the okrug. Contributing to the formation of the haze are the clouds of dust released from the cement plant and the great amount of vapors and smoke from the plants of the chemical industry and the TETs [thermal power plant]. There are many fewer rainy days. It may be assumed that there is no link between the increased haziness and the amount of rain in this region.

In our estimate, the most frequent and heaviest damage is caused to the plant world by the chlorine and cement dust. Thus, last year, 1300 decares of wheat in the ear-formation stage were affected by chlorine, 100 decares of sunflower, up to 1200 decares of sugar beet and 400 decares of alfalfa. The sunflower and beet were in the phase of 1-2 pairs of true leaves. The injuries were expressed in a disturbance of the chlorophyll and a whitening of the leaf bulk. This situation reflected unfavorably on the growth of the wheat grain, since the youngest (last) leaves which die the latest and which best photosynthesize and feed the winter wheat were destroyed. In our estimate, this was reflected in a reduction in the yield of at least 15-20 percent. Chlorine has less of an effect on sugar beet and alfalfa which were younger in terms of their stage.

In 1974, the chlorine released because of technical factors damaged sunflower in the budding phase. Where the chlorine zone was more concentrated, the sunflower plants remained strongly disrupted in their development ("dwarfs"), and from the surviving sunflower, the yield was reduced by 25-30 percent.

The released harmful gases such as sulfur dioxide, nitrogen trioxide and others from the nitrogen fertilizer plant this year had the strongest effect on the leaves of the vineyards near the plant. Initially chlorotic and red-brown spots appeared, and later a desiccation of the leaf tissue between the veins and the periphery was observed. The grapes were underfered and the harvest was sharply reduced in comparison with the undamaged grapes.

Equally injurious was the influence of the constantly released dust from the cement plant on the vegetation. The most strongly hit was an area directly around the plant with a diameter of 2.5-3 kilometers, and here one could observe a clearly discernable layer of cement on the leaf surface of the plants. The cement dust was not only on the upper side, but also on the under side of the leaf, and this obstructed both assimilation as well as respiration of the plants. For this reason, the fruits (peaches and apricots) and vegetables for years have not been purchased by the trade organizations. This has necessitated the culling and uprooting of 1200 decares of orchards, as well as the elimination of 300 decares of vegetable gardens in the region. It has also been necessary to alter the structure of the crops. In addition to this, from the release of more than tolerable quantities of sulfuric acid in the industrial water, even in being passed through the treatment plant, in irrigating the crops, an acidifying of the soil is observed, and hence a reduction in fertility.

The soil fertility in the Devnya Lowlands is lower in comparison with the remaining enterprises of the PAK. We ascribe the reason for this to the effect which the polluted air and water have on it. This question should be taken up by the N. Pushkarov Institute for Pedology and the Programming of Yields, and a scientific explanation given to it. Along with this, measures are being taken to "treat" the soil and further improve its fertility.

The air pollution in the Devnya Lowlands is reflected directly or indirectly on the development of animal husbandry and its productivity. Here, with the same care and diets, in comparison with the neighboring enterprises of Devnya,

a certain reduction in the milk yield is observed as well as greater incidence of gastroenteritis, dyspepsia and bronchial pneumonia among the calves.

The wool obtained from the sheep farm in Devnya and Kipra has poorer processing qualities because of reduced elasticity as a consequence of the adhering of cement to it, and is purchased as damaged.

The designated examples are only a part of the negative effect of air and water pollution in the lowlands caused by the great Devnya chemical industry. We feel that in the future this question must be studied by the appropriate institutes involved in the questions of soils, crop raising and animal husbandry.

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CSO: 5000

INCREASED AIR, WATER POLLUTION THREAT TO ECOLOGY, PEOPLE

Belgrade PRIVREDNI PREGLED in Serbo-Croatian 16 Feb 77 p 11

[Article by Dragovan Lazarevic: "Ecological Problems: In the Future--No Excuse"]

[Text] It was long ago that the Danube was blue, as far back as the time of Strauss, the composer who made it eternal. Contemporaries must reconcile themselves to the "ugly, muddy Danube" which carries refuse and chemicals. Experts caution that the quality of the Danube water at the entrance into our country alone deteriorates [at a rate of] 5 percent annually.

The Sava, the Drava, the Mura and other rivers are no cleaner. The newspapers carry daily announcements in bold headlines of occasional catastrophes in our waterways. The Neretva is one of the fresher examples. In the past year alone Slovenia registered 30 complete extinctions of fish in the rivers. The campaign for sugar beet processing is at the same time a campaign for fish destruction in the Danube-Tisa-Danube canal as well as in some other water arteries. The rivers are paying mass tributes to urbanization, industrialization and to our negligence.

The polluted river water also penetrates underground, poisoning the springs of drinking water. Water pollution in one portion of the Podunavlje [Danube shoreline] also impairs the increase of the level of underground waters as a result of the operation of the dam at Djerdap. For the cities along the Danube, including Belgrade, this phenomenon creates new difficulties.

An Attack on Health and Vegetation

Industrialization and urbanization have polluted the air to an alarming extent. Smog is a regular companion to large cities and industrial centers. The most recent data show that about 50 settlements are affected by air pollution. In 20 settlements the air is polluted beyond measure, so that it destroys the vegetation. Excessive freedom is enjoyed by owners of motor vehicles, the exhaust pipes of which belch carbon monoxide. Other people's health is at the disposal of smokers. We smoke even in clinic waiting rooms.

The noise in cities and industrial centers, particularly along traffic arteries, is increasing rapidly. It frequently reaches 100 decibels. The permissible maximum in industrial settlements is 65, while in residential areas it is 35 to 40.

Asphalt, concrete, bricks, glass, plastic, bare rocky terrain and wastelands are compressing the green areas. In the future more attention should be devoted to the foliation of karst and the restoration of the wastelands. There is an active effort around the world to protect swamp areas. We are late on this score as well. Nor are we serious enough about working on the prevention of our greatest ecological problem--erosion, the attendant phenomena of which are floods.

In a number of work organizations problems of worker protection and professional illnesses are solved inadequately. Despite the percentage decrease in accidents, the "army" of work invalids is larger than that of war invalids. The action of the trade union in this area, which was recently given a new impulse, deserves support and assistance.

Despite the improvement of residential conditions, sustenance, child care and the broadening of the network of health institutions, illnesses associated with respiratory and digestive organs as well as illnesses associated with the cardiovascular system are registering an increase in large cities and industrial centers. These illnesses are a consequence of polluted air, water and food items.

The Work Is Yet To Come

These highly alarming indicators do not mean, however, that nothing has been undertaken in this area. There exists a legal regulation and a number of organizations for the protection of the environment, even though the results are rather modest. Up until now there have been only singular, partial and local actions, insufficient for the protection and improvement of the environment. Encouraging are data, as recently stated at a press conference by Dr Ales Bebler, president of the Yugoslav League for Protection and Improvement of the Environment, that Palic was regenerated, that individual cities have begun the cleaning of refuse waters, that a number of enterprises have improved the hygienic conditions of work and have installed filters on the smoke stacks. The effort to collect usable refuse materials has been intensified; zones without automobiles are being established in the cities; in larger ports refuse is not discarded into the sea; there is maintenance of parks, school yards, streets...

The action has started although the real work is yet to come.

YUGOSLAVIA

BRIEFS

NEW PURIFICATION EQUIPMENT--The TAM Automobile and Engine Plant, the largest work organization in Maribor, will no longer pollute the Drava river with various oils. A few days ago, it received purification equipment from West Germany for separating oil emulsion from water. The purified water, which will be sent back into the Drava, will no longer pollute the environment; the oil will be recycled by Petrol in order to be used again. The purification equipment, which costs 100,000 Marks, was produced by the ABCOR DUPR plant in Stuttgart. It has already been installed at the TAM, and on Monday, it will be put to its intended use in the presence of a representative of the West German firm. The equipment at TAM is also a part of a central system for feeding coolant to machinery. The purification equipment operates on the principle of individual "ultra filters" which are made in the U.S. [Text]
[Maribor VECER in Slovenian 21 Jan 77 p 7]

CSO: 5000

ENVIRONMENTAL PROTECTION MEASURES IN ARMENIA

Yerevan KOMMUNIST in Russian 5 Jan 77 p 2

[Article by A. Mkhitarian, candidate of technical sciences, scientific secretary of the Armenian branch of the USSR Academy of Sciences Scientific Council on Economic Problems of the Scientific and Technological Revolution: "Problems and Logic: The Biosphere as a Topic of Research"]

[Text] Man's potential is endless. Scientific and technological progress not only multiplies it but transforms it into reality. Under conditions of gigantic industrial production whenever our internal environment is polluted our number one priority is to preserve and develop opportunities for the health of man. This is how we display our concern for future generations.

Work is being done in the Armenian SSR in the field of improved sanitary conditions for the environment and protection of the biosphere. It is all the more necessary where a significant portion of the republic's economy is occupied in such primary branches of industry as mining, chemical production, agriculture and water management.

The predominant proportion of the primary branches of industry, the high density of population, limited land area and the specific natural conditions of Armenia emphasize the ecological problems even more and make great demands in this area on the planning and economic organizations, scientists and all our republic's workers.

At present the hydrometeorological service on a regular basis three times daily monitors pollution of the air basins of Yerevan, Kirovakan and Alaverdi and in instances where there is a rise in unfavorable atmospheric conditions the service immediately notifies the enterprises about the need to take steps.

Much work to prevent atmospheric pollution of the neighboring rayons has been conducted at enterprises of the mining, metallurgical and motor vehicle transport industries. The following can serve as examples: the installation of an experimental device to trap nitric oxides, a dust trapping device used in the production of carbamide at the Kirovakan Chemical Combine imeni A. Myasnikyan, installation and activation of a sanitation device in the productive process at the plant Polivinilatsetat.

A considerable amount of work is to be done in the republic during the present five-year plan. And so, at the Razdan Mining and Chemical Combine, thanks to the replacement of the existing electrofilters with two new more powerful ones that have been built, the content of dust in exhaust gases by 1977 will be reduced to maximum acceptable standards. At the Alaverdi Mining and Metallurgical Combine discharges of sulfurous anhydride by the end of the five-year plan will be lowered by four times in comparison to the present amount.

Unfortunately, not all planning work is carried out on time and in proper volume. At the Ararat Cement and Slate Combine, due to weak filters, the lack of a specialized engineering system, and the absence of suction and ventilation devices, up until the present daily hundreds of tons of cement and lime dust is discarded.

A number of important measures have been carried out in the area of efficient utilization and protection of water resources and in the efficient use and conservation of arable land. A general anti-erosion and anti-salinization system of measures has been created. Soil conservation work, agrotechnical, engineering-construction and hydrotechnical work, land reclamation of rocky and saline soil as well as forests and terracing of steep inclines are projects under way.

It is not difficult to note that all the measures listed have been aimed for the most part at decreasing and eliminating the negative consequences of operational production.

However, the problems of complex and efficient use of natural riches and environmental protection cannot be settled only by means of measures having "restorative" character.

One of the means for efficient use of natural resources and protection of the biosphere is the use and repeated use of by-products. Thanks to measures that have been adopted 70-80 percent of cement dust discarded into the atmosphere is again returned to the cement furnaces by the Razdan Mining and Chemical Combine.

But, despite what has been done, there are serious insufficiencies taking place.

The scale of industry unswervingly grows. Therefore, we must begin planning new directions calling for preventing inefficient use of natural resources and environmental contamination. It is imperative that we have an account of the ecological demands in the plans which lay out the engineering schemes whenever constructing new industrial and agrotechnical projects. It seems to me that the planning organs must reject and not include in their construction title lists the construction of projects which do not respond to ecological demands. The practice of looking at plans from the point of view of the regional organs responsible for environmental protection should be implanted. After all, many large-scale projects are being planned by organ-

izations territorially removed from the point of construction and inadequately informed about the ecological conditions of a given region.

The most progressive trend capable of providing protection of the biosphere is the changeover to principally new technological processes which allow for organizing limited by-product or non by-product closed production.

The major problems dictate the necessity of carrying out organizational measures. In the first place there is the need for an institution serving as a special interbranch governing organ for control over the utilization of nature and protection of the biosphere. Similar state committees are already functioning in a number of union republics. It would be advisable to organize inspection services of a corresponding purpose attached to the executive committees of municipal councils in major industrial centers, the first ones in Kirovakan, Alaverdi, Kadzharan, Agarak and elsewhere.

There is an urgent need making itself felt to set up a scientific-research ecological center with planning and technological services and an experimental base. The scientific center must coordinate the work and conduct contractual work on all topics with the branch scientific research organizations even directly with the republic's industrial projects in the field of planning technological means and procedures for protecting nature. The establishment of such a subdivision in our republic does not require large allocations of funds. It can be formed on the base of presently operating organizations of a similar profile. A major portion of the expenditures will be overlapped by economic contractual agreements.

Already now we should be concerned about training and cross training personnel. I think that the republic's ministry of higher and intermediate specialized education can try to find opportunities for the training of ecological specialists and engineering radio technicians possessing special biological training. The higher institutes of learning, the scientific institutions and primarily the organizations of the republic's academy of sciences must see to the training of new types of highly qualified scientists, scientific pedagogical and scientific technical personnel who combine the knowledge of biology, atmospheric physics (meteorology) with a high level of knowledge of mathematics and computer and cosmic technology, as well as other specialists. It is necessary right now to embark on putting together an ecological map of the republic, especially of the land areas being protected (health resorts, sanatoriums and preserves).

The realization of effective environmental protection measures and the complex utilization and regeneration of natural resources will allow us to achieve a judicious balance between nature and industry. They will permit the prevention of negative influences on man, the animal and plant world, and will allow us to preserve and improve the natural potential in the interests of the present and future generations.

EDITORIAL ON ENVIRONMENTAL PROTECTION

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 16 Jan 77 p 1

[Editorial: "A Word to the Reader: Our Subject Today Is a Careful, Solicitous Attitude Toward Nature"]

[Text] There is an expression: the Donbass air. It cannot be duplicated, this air, infused with the scent of steppe grasses and seasoned with the bitter haze of coal cinders. The trouble is, however--in the last few years the composition of the poetic Donbass air has changed, and not for the better. There is less of the steppes and more--of the mines, plants and quarries. If one more step is taken from poetry to a precise analysis, this is what happens: of the 2100 waste piles scattered throughout the country, 1250 are the waste piles of the Donbass.

You know, of course, what a waste pile is. But in order to broaden this knowledge and emphasize the potential danger of these peacefully smoking mounds, we will give this example. One of the legendary seven wonders of the world--the pyramid of Cheops--has a foundation area of less than two hectares. The ordinary mining "wonder," however--the waste pile of the Kochegarka mine--is about 30 hectares.

Attempts have been made to remove the waste piles and fill in the barren gullies with rock. The banks of the Kamenka Mine in Donetsk were eliminated in this way. Take them away--that is what they did, but not a hand was raised to the second waste pile: it is expensive! It cost almost two rubles to transfer each cubic meter of rock from the heap. Even in a medium-sized waste pile, there are millions of these blocks.

A way out of this situation was suggested by the enthusiasts of a new direction in biological science--industrial botany. It appears that at the extinguished and specially prepared waste piles there are over 30 types of grass and trees growing, including acacias, maples, poplars and even cherry and apple trees. The bank in the Kuybyshev region of Donetsk and many, many others have already been planted with trees and shrubs.

In his speech at the 25th Party Congress, L.I. Brezhnev, general secretary of the CPSU Central Committee, said: "... We can and we must, comrades, ennoble nature and help nature reveal its life forces more fully. There

is a simple expression known to everyone, "the flowering land." This is what the land is called where people's knowledge and experience, their affection, their love for nature truly work wonders. This is our way, the socialist way."

A solicitous attitude toward nature has become one of the indisputable laws of our life. The state has allocated about 11 billion rubles for this purpose in the Tenth Five-Year Plan. The sky and rivers have become purer, the land more beautiful and fertile. In Donetskaya Oblast alone, for example, in the last 10 years, 3000 hectares of recultivated land have been turned over to the national economy, about 900 kilometers of small river channels have been cleared, and almost 800 dust- and gas-removal units have been constructed and renovated.

There are splendid examples, when the "dirtiest" enterprise is in operation without harming nature.

Was it so long ago, for example, that the Barnaul Khimvolokno Association was an "ecological threat" to the city! Fines were paid, and we were convinced that this traditionally "dirty" production facility could not avoid certain losses.

It was not easy to implement the reversal from the enterprise's present-day needs to the seemingly imponderable concern for the air that we breathe and the water that we drink. The nature conservation division established at the enterprise exerted great efforts to connect a moral influence on the violators with economic penalties. The solution, as usual, was simple: if the carbon disulfide concentration in the air mixture was lower than that established, that meant that the gas had gone off into the atmosphere, and the shop should pay the regeneration section the value of the amount by which the product obtained was short. This sum is applied to the production cost of this shop's output, with all the resulting consequences.

In a word, the reversal was made. In just five years, the enterprise's repeated use of water increased from 49 to 70 percent, and the city's air has become practically pure.

This means that one can work, and work well, without harming nature. This is already an axiom and needs no proof. It also has a purely practical interpretation: today even the most sluggish economic planners are turning increasingly rapidly and increasingly actively to problems of ecology. This is the way it turns out sometimes, however: those very miners who enthusiastically plant trees and greenery on the lifeless waste piles heap up new, burning ones at increasingly rapid rates.

"But what about the waste-free production process!" the reader will ask. There is such an extraction process: advanced, economical. With this process all the rock remains in the worked face. In practice, however, only one ton of barren rock out of 50 remains in the face. Just as

before, 49 tons go up to the surface. Waste-pile-free, and in the broader outlook, waste-free coal extraction process has not yet been mastered by the minds of the coal-mine planners. This is still in the distant future for them.

A great obstacle in the struggle for a solicitous, careful attitude toward the environment is the lack of unified norms for the consumption of water and toxic raw materials for all production facilities of the same type. It is quite impossible to understand, for example, why one enterprise of the USSR Ministry of Chemical Industry consumes 350 cubic meters of water to obtain a ton of viscous fiber, and another--925 cubic meters.

It harms the river in which these immeasurably large discharges are poured, it harms the national economy--there is no longer enough water in many of the country's regions--it harms the ministry that is reconciled to such wastefulness. After all it is one thing to construct purification installations estimated for the minimal norms of water consumption, and quite another to construct them for the maximum. Especially since the construction of purification installations is still expensive: up to one-fourth of the funds spent for the installation of the enterprise.

Such facts are all the more intolerable, since it is at the Ministry of Chemical Industry that there is a truly responsible attitude toward the environment. This is one of the few ministries where it was the planners who were engaged in the first place in the struggle for a solicitous attitude toward nature. This is quite correct: after all, the enterprise that plans today will work under increasing ecological demands. The ruble spent to purify the environment in planning will be paid back a hundred-fold.

In a word, the reserves are tremendous. We are only beginning to put them to work. But what an effect! Two decades ago, no one would have paid any attention to speeches on the possibility of waste-free enterprises existing, at best. Today, however, such giants of the metallurgical industry as Azovstal' or the Plant imeni Il'ich in Zhdanov are making full use of slag. Indeed, millions are being obtained in profits. Roads and homes are being built, and mineral fertilizers are being produced from metallurgical slag. The very concept of "waste" is beginning to be considered as a shortcoming in the industrial process of a certain specific enterprise.

The forests merit a special discussion. The forest is our pride, our wealth. To protect it from unnecessary felling, from fires is the duty of every Soviet person. Look at the figures that were recently presented at one of the conferences on combating forest fires: only 7 percent of all the fires are due to thunderstorms, but 92 percent--to man. This is the real bill of indictment of our carelessness, of a negligent attitude toward nature.

Protecting the environment is a cause for the entire nation. It must be put into full swing, supported by a wide number of active members, by the production collectives. Many of you, dear readers, know about the work of the

Committee on the Desna Problem. Here is a clear lesson in assiduous, competent management, and high patriotism. The matter conceived was simple: to return the river to the region. But what efforts it cost and still costs! Various oblasts, various departments and a varied approach to the matter. The Desna alone is splendid and vulnerable. It is still too early to say, it is said, that its former beauty has been returned to the river. But that it will return--there is no question.

The riches of nature may be used without destroying it. Not may, however--must. Today each of us is personally responsible for nature conservation.

12151

CSO: 5000

EDITORIAL ON ENVIRONMENTAL PROTECTION IN MOSCOW

Moscow MOSKOVSKAYA PRAVDA in Russian 25 Jan 77 p 1

[Editorial: "An Important Cause, a Common Cause"]

[Text] Protecting the environment is a major socio-economic problem, being successfully solved in our country. Specific measures in this area were outlined by the decisions of the 25th CPSU Congress, the "Fundamental Directions for the Development of the USSR National Economy in 1976-1980."

In his speech at the congress, Comrade L.I. Brezhnev, general secretary of the CPSU Central Committee, noted: "...We can and we must, comrades, ennoble nature, and help nature to reveal its life forces more fully." The Party Congress emphasized the increasing importance of protecting the environment, and determined ways to ensure, in the Tenth Five-Year Plan, the consistent implementation of the exceedingly important state task. Tremendous resources are being allocated for this purpose--11 billion rubles.

Preserving the beauty of nature, augmenting its bounty and placing natural resources in the service of mankind are an extremely noble cause, the great duty of the citizens. A great deal is being done in this direction in the capital city of our native land. In putting into effect the task posed at the 24th CPSU Congress of turning Moscow into a model communist city, the CPSU Moscow City Committee and the ispolkom of the Moscow City Soviet of Workers' Deputies are paying primary attention to environmental protection. The solution to these problems is integrally bound with reinforcing the natural basis of physical production, with improving the health of the population and ensuring Moscow citizens the necessary conditions for fruitful work and leisure.

During the Ninth Five-Year Plan and the past year, a number of enterprises in industry, transport and municipal services put into operation highly efficient installations for purification of industrial and surface waters, and gas- and dust-catching units were constructed and modernized. Improved industrial processes were introduced at many factories and plants. The Moscow River, Yauza and other reservoirs are cleaner. A great deal of work has been done on public services and amenities and planting trees and shrubs in the city. The sanitation of most of the streets, squares and microrayon territories has improved.

Protecting the water and air and efficient utilization of natural resources constitute a problem requiring the attention and efforts of party organizations and enterprise collectives, scientific and medical institutions, municipal services and each Moscow citizen. The initiative of the Moscow Board of the Scientific and Technical Society (NTO) of the Petroleum and Gas Industry imeni Academician I.M. Gubkin deserves every possible support in this connection. The members of this society decided to take under their supervision the development and implementation of measures to protect the environment in the capital. They called upon their colleagues to do this work with the motto, "For a Model City--Model Service in Protecting Nature." The initiative was also supported by other Moscow NTO boards--of the power and electrical equipment industry, municipal and everyday services and the All-Union Chemical Society imeni D.I. Mendeleev, and was recently approved by the City Soviet of Scientific and Technical Societies. Further dissemination of this initiative is an important task of the primary NTO organizations of scientific institutions, enterprises, VUZ's and all scientists and specialists.

The undertaking of the party organization and collective of the Institute of General and Community Hygiene imeni A.N. Sysin of the USSR Academy of Medical Sciences is an interesting one. Its associates set themselves the task, in this five-year plan, of turning their scientific institution into a model one, creating the hygienically optimal conditions for the life and work of the Moscow citizens and strengthening the ties of science and practical work. In the first stage of this work it is proposed that studies be made, in conjunction with the city epidemiological station, to evaluate the state of environmental control and work out practical recommendations. There are also plans to establish a consultation center at the institute, in constant operation, on problems of sanitation protection of the capital's air and water.

Protecting nature is an important cause, a common cause. These problems are not yet being given the proper attention everywhere, however. As is noted in the recent joint decree of the bureaus of the Moscow City Committee and local committee of the CPSU, and the ispolkoms of the Moscow City Soviet of Workers' Deputies and the Moscow Oblast Soviet of Workers' Deputies, "On the Plan for Measures to Protect the Environment in the City of Moscow and in Moscow Oblast in 1976-1980," construction and renovation of water- and air-protection installations is being carried out slowly at a number of enterprises. The capital investments allocated for this yearly are not being utilized. The rates of installing purification complexes still lag behind the rates of industrial and housing and municipal construction.

A number of ministries and departments permit substantial shortcomings in the solution to these extremely important problems. Among them are USSR ministries--automotive, food, electrical equipment, chemical, machine tool building and instrument industry, and some others. The main administrations and administrations of the Moscow gorispolkom are not taking the proper measures to accelerate the construction and modernization of projects for nature protection, and to reduce the toxicity of exhaust gases from motor

vehicle engines. The removal of enterprises and organizations that are harmful from the sanitation standpoint to locations outside the city limits is still being implemented slowly. The situation is unsatisfactory with respect to utilization and processing of industrial wastes and residues.

All these omissions are evidence of the fact that the CPSU rayon committees, the rayispolkoms and the primary party organizations are not imposing sufficiently exacting requirements on the directors of the ministries, departments and enterprises for promptly putting highly efficient purification complexes into operation and for unconditional fulfillment of the assignments involved in environmental protection.

The scientists of the capital owe a great debt. The scientific institutions and VUZ's are still doing very little research, which could contribute to more active nature protection if it were introduced. There is still a great deal to be done by the planners, to ensure prompt and high-quality development of the specifications for construction of modern purification installations. Everything possible should be done to support the initiatives of the workers' and scientific collectives, their party organizations and the broad strata of society who are striving to make their worthy contribution to improving the sanitary conditions of the environment, making civic improvements and planting trees and shrubs in our native city.

The bureaus of the Moscow City Committee and local committee of the CPSU, and the ispolkoms of the Moscow City Soviet of Workers' Deputies and Moscow Oblast Soviet of Workers' Deputies approved a plan of measures to protect the environment in Moscow and Moscow Oblast in 1976-1980, coordinated with the ministries and departments. The work will be substantial and crucial. Above all, there must be a guarantee of drawing up scientifically substantiated programs directed toward protecting nature and efficient use of natural resources in the period up to 1990, in accordance with the plans for measures to achieve a solution to the problems of the capital's socio-economic development. Here there must be united, comprehensive efforts from all the organizations concerned--scientific research institutes, design bureaus, VUZ's, institutes of the USSR Academy of Sciences and Academy of Medical Sciences, industrial and motor transport enterprises, ministries and departments. Solving these problems should be the constant focal point of the CPSU rayon committees and ispolkoms of the rayon soviets.

In preparing a fitting welcome for the 60th anniversary of the Great October Revolution, and responding with action to the joint decree of the CPSU Central Committee, the USSR Council of Ministers, the All-Union Central Trade Union Council and the Central Committee of the All-Union Lenin Young Communist League, "On All-Union Socialist Competition To Increase Production Efficiency and Work Quality and Successfully Fulfill the Assignments of the Tenth Five-Year Plan," the collectives and party organizations of the scientific institutions, enterprises and all the workers of the city are doing everything to preserve and augment the beauty of their capital and turn it into a model communist city.

POLLUTION CONTROL IN THE NIKOLAYEVSKAYA OBLAST

Kiev RABOCHAYA GAZETA in Russian 14 Jan 77 p 4

[Article by S. Kachikov: "Let the Young Sprouts Be Good--The Nikolayevskaya Oblast Party Committee and the Oblast Executive Committee Mobilize the Oblast's Workers in the Struggle for a Clean Environment"]

[Text] Many people are very likely to know the reputation of the Nikolayev region. It is the republic's naval setting, the land of the sun and steppe, the sea and estuaries. Well, what could be wrong with this southern oblast? Everyone would respond "practically nothing" to this question. But here, first and foremost, there is a lack of fresh water and planted trees.

Looking at a map it would be difficult to assume that the oblast has a water shortage. One's eyes see the deep Dnepr-Bug estuary, and the meandering Ingul and numerous other smaller rivers.

Let us take the Ingul as an example--the second largest river in the oblast extending more than 400 km. The plowing up of the slopes along its shores, the destruction of trees on its banks and the dumping of waste products from stone crushing quarries has led to the fact that this once full-bodied and lively water artery has been transformed into a shallowing small river. Once upon a time deep rivers like the Mertvovod and the Visun' were better off. Old timers from Voznesensk remember the time when barges made their way along Mertvovod. And now a flat-bottomed boat cannot pass here. The Visun' can no longer be called a river. It has been changed into various, not interconnected, small lakes and ponds. This was "assisted" by the Danilovskiy rock quarry and the Kazanka oil mill which year after year choke up the small river with unfiltered sewage. At fault as well are many kolkhozes in the Kazankovskiy and Bereznegovatskiy rayons that thoughtlessly plowed up hundreds of hectares of land along the shores and uprooted trees and undergrowth along the shores of the Visun'.

And such, speaking softly, is the irresponsible regard for the small rivers, however sad, inflicting great losses. This is attested to by the disastrous condition of the oblast's other small rivers--the Chichikleya where the Veselinovskiy dry milk plant made a solid contribution to its destruction,

the Gnilyoy Yelanets, the Gromokleya. Yes, and then there is the mighty Yuzhnyy Bug--the pride and joy of the Nikolayev region--it has grown noticeably weaker, its water has become cloudy.

Why is such an uneconomical, devil-may-care approach to conserving water resources tolerated? Indeed, at times it happens not as a result of prosperity. But the facts are such that contamination of water sources takes place simply due to the indifference of the managers of enterprises. And so, through the fault of the director of the granite quarry Trikratnoye, L. Braun, the channel of the small Arbuzinka was just within a hairbreath of being completely filled with waste products and due to failure to use sewage treatment facilities at the Bashtanka cheese plant of the oblast administration of the daily industry managed by A. Gorin, fish in the Ingul River were poisoned.

Into this unsightly picture of polluted water resources, the neighbors of Nikolayev--the enterprises of Krivoy Rog add their own "greasy smears." From them just in 1975 through the irrigation network together with the water of the Ingulets thousands of tons of harmful chemical agents descended on the fields of the Snegirevskiy and Zhoutnevoy rayons. But the managers in these rayons and at the Ingulets trust of sovkhoses, knowing about this menacing state of affairs, do not sound the alarm nor complain to Krivoy Rog.

Unfortunately, there are no guarantees that the conditions created will change for the better in the future. Here and there, it is true, scientifically developed, complex measures to restore the bodies of water are being carried out. In particular, a system of measures to revivify the river bed of the Mertvovod has been outlined. On the other hand in a number of other places future plans differ slightly from the present non-economic ones. For example, plans calling for sewage treatment plants at the new Voznesenskiy tannery are calculated on 6,000 cubic meters of sewage water daily when the plant's daily requirement exceeds 30,000 cubic meters.

Meanwhile, the people of Nikolayev have set good examples quite deserving of imitation. For example, at the Okean shipyard strict public control has been established over all dumping into the Yuzhnyy Bug. A complex sewage treatment system has become a reality that includes mechanical and biological purification, a station to filter bilge water that has been constructed according to its own plan. By not restricting what has been achieved the shipbuilders have developed and are carrying out a complex plan to protect nature in the 10th Five-Year Plan.

Interesting experiences like this have also taken place at another Nikolayev enterprise--at the lubricating systems plant. Here the public has also been widely enlisted. Fish protection posts have been established. The coagulation method to purify sewage has been adopted which is more effective and cheaper than former methods in that it stipulates repeated use of water.

The effect achieved is even greater where in the struggle to conserve nature the forces of several enterprises are combined as has taken place in the village of Ol'shanskiy near Nikolayev. A joint constructive quest by the

innovators at the cement and hydrolytic yeast plants led to setting up of a closed circulating water supply system in which the aggressive sewage of one enterprise is neutralized as a result of their use by the neighbor.

Unfortunately, the positive experience of thrifty regard for water resources is something used altogether too timidly in the Nikolayev region. It is not by accident that 32,000 cubic meters of water is overexpended here daily.

A similar situation was established with the forest riches of the region. Although the oblast has three forest reclamation stations and 16 forestries, year after year at the leading forest plantations the overall area for planting barely increases amounting now to somewhat more than two percent of the territory. This takes place because the planted trees are poorly cared for and at times are mercilessly and thoughtlessly destroyed. The figures do not really indicate this. For the years of the last five-year plan in the Nikolayev region more than 18,000 hectares were planted with trees, including more than 5,000 hectares of field protecting tree planted strips. But at the same time 28 percent of the forested strips were written off as a result of uprooting, corrosion, toxic chemicals and mechanical breakdown.

And would it not be better if everywhere in the oblast the practice of the Kolkhoz imeni Kirov in the Voznesenskiy Rayon was observed. According to a plan practicing scientific recommendations, the kolkhoz parcelled out 235 hectares of terrace in recent years, planted nuts and crimean pine and planted 126 km of new forested strips.

When speaking about environmental protection problems we cannot be silent about air pollution. Even though Nikolayev is doing something in this regard, (many boilers have been changed over to gas, several enterprises have been moved from the center of the industrial zone, etc.) on the whole much is still desired. At the road machine building plant Dormashina, for example, located in the very center of the city one-third of the exhaust ventilation devices are in disrepair and two-thirds of the sources of air pollution have not been provided with dust and gas trapping equipment. An even greater threat is posed by the Nikolayev heat and electric power plant whose flues daily spume out dozens of tons of ash into the atmosphere.

I have cited many examples both positive and negative which characterize the mutual relationship between man and nature in the Nikolayev region. In executing them I refer to the participants of a recent oblast aktiv that took place in Nikolayev. The very fact that this representative forum was conducted is encouraging. The forum report was delivered by the representative of the oblast executive committee, F. F. Zayvyy, and the first secretary of the oblast party committee, V. A. Vaslyayev, gave a detailed speech. Incidentally, this is not the first major measure taken in the oblast for environmental protection. It was preceded by the meeting of the oblast committee bureau which strongly penalized several negligent economic managers. Also adopted were several decrees of Soviet organs.

It follows that in this matter all of these good decisions must be translated into reality.

WATER POLLUTION IN KIRGIZIYA

Frunze SOVETSKAYA KIRGIZIYA in Russian 19 Jan 77 p 4

[Article by A. Kan and O. Suyunbayev, workers in the Frunze Fish Conservation Inspectorate: "Why Are the Lakes Dying?"]

[Text] Kirgiziya has many water resources rich in valuable varieties of fish. But unfortunately, there have been many recent instances of their pollution by impure sewage from various industrial enterprises. Last June, for example, almost all the fish in the Krasnaya River and the western branch of the Great Chu Canal perished. They were poisoned by sewage water from the primary wool treatment factory in Tokmak. According to an incomplete tabulation the overall losses suffered to the fish supply is determined to be more than 20,000 rubles. The factory managers were fined in an administrative procedure and submitted for criminal action. The State Arbitration Court of the Kirgiz SSR Council of Ministers passed a decision to exact a fine from the enterprise for reparations for the damage inflicted.

It was anticipated that this would serve as a lesson to many managers of enterprises in the Chuyskaya Valley. But.... There is still no end to court proceedings here, as a similar instance was repeated at the reservoir Dzhalgach (Chat-Kul') in the Sokulukskiy Rayon. Incidentally, a fish loss in this reservoir was noted back in 1973 but the fish conservation organs at that time were not able to hold the guilty parties accountable. And now the Dzhalgach, which served as a favorite rest and relaxation spot for the workers, has almost lost its significance. Upon examination of the reservoir a commission established that the fish here simply suffocated, poisoned by the impure sewage water from the Novo-Troitskoye sugar refinery which sucked in masses of rotted organic substances from the Gavrilovskiye ponds and gullies. These ponds also quite recently were beautiful relaxation areas and favorites of fishermen. But not long ago they became muddy and contaminated with sewage flowing through a failing pipe-line of the sugar refinery. Damage to the fish supply amounted to more than 10,000 rubles.

The pollution of the Dzhalgach reservoir with sewage water through the fault of the sugar refinery managers qualifies as a gross breach of the Statute of Protection of Fish Supplies and the Regulation of Fishing in USSR Bodies of Water approved by a decree of the USSR Council of Ministers. The guilty were held responsible and the refinery was sued.

The sugar refinery managers, director A. S. Samatkulov, deputy chief engineer F. N. Dobronravov and others were fined.

VIOLATIONS OF POLLUTION STANDARDS IN FRUNZE

Frunze SOVETSKAYA KIRGIZIYA in Russian 19 Jan 77 p 4

[Article by M. Filenko, senior instructor at the Central Council of the Republic's Society for the Protection of Nature: "The Breathing of a City"]

[Text] It is well known that the combustion of one kg of gasoline results in the exhaust of .5 kg of carbon monoxide fumes into the atmosphere that can absorb the hemoglobin in blood 210 times faster than oxygen! This is why an increased content of carbon monoxide so destructively acts on man, first and foremost on his central nervous system, respiratory system and his vision. Our country has adopted special decrees on standards for the maximum permissible content of carbon monoxide in exhaust fumes for all types of motor vehicles with gasoline engines. However, violations on these standards often occur.

Traffic flow increases with every passing year in Frunze. On Leninskiy Prospekt in particular, between the streets imeni Beyshenaliyevoy and 40 Let Oktyabrya traffic is quite heavy both day and night. Buses, moving from place to place using high capacity engines, create noise and leave behind trains of smoke. The emission of spent gases increases with the frequent stops. Just such a situation takes place on this section of the street. The bus stops are irrationally placed on the portion between the academy of sciences and the brewery. The bus does not gain speed before it becomes necessary to stop and this again raises the amount of emitted carbon monoxide. The trolleys have just about been deprived of opportunities to maneuver. Leninskiy Prospekt must be maximally relieved right now and the majority of bus routes moved to other streets.

The situation is similar on Moskovskaya Ulitsa. For example, at the Bukinist store there is a well-built stop and just 250 meters away on the corner of Moskovskaya Ulitsa and Ulitsa Belinskogo there is still another.

Why not conduct monthly campaigns in the republic for the maximum decrease of carbon monoxide emitted into the atmosphere? In attaching serious significance to protection of the air, the republic's Society for the Protection of Nature has put out a poster with a plea to all of the republic's drivers

to lower the amount of time their engines idle on enriched mixtures and at high revolutions. We urge everyone to strive to see that Frunze becomes a highly cultured city on these questions. Our task is in the shortest time at all the republic's motor vehicle organizations to place devices on the engines of the vehicles to allow for decreasing the exhaust of harmful substances into the atmosphere. Such devices are being developed in one of the laboratories of the Frunze Polytechnical Institute. City automobile inspection [GAI] organs must wage a decisive battle with violators of the laws for the protection of nature, not allowing vehicles to leave garages that have high smoke levels. We think that GAI in its published charts should provide information about how many vehicles have been taken off the road for these violations. The names of the drivers and the managers of the motor vehicle organizations should be presented from which subsequently it might be possible to hold those responsible for such a large score.

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CSO: 5000

PROTECTING LAKE BAYKAL

Moscow EKONOMICHESKAYA GAZETA in Russian No 5, Jan 77 p 24

[Article by A. Veretennikov: "Protect the Pearl of Siberia"]

[Text] Last year the time came to recall half-forgotten recipes for preparing omul: after a seven-year ban, the first thousands of quintals of this delicacy among fish were caught, and appeared in Irkutsk stores. This fact reflected the active work of hundreds and thousands of people concerned with preserving the purity of the "Pearl of Siberia"--Baykal.

Day and night, in accordance with its continuous industrial process, the Baykal Pulp and Paper Plant is in operation, producing cord pulp of the highest quality. Every day up to 300,000 cubic meters of sewage are dumped in the lake. Purified, of course. The purification installations are in themselves a substantial enterprise. On the facade, in large letters, is written: "Purification Workers! You Are the Shield for Baykal."

On the day of our visit, Faina Aleksandrova, chief of the shift, was in skillful command of the "shield." We were familiarized with the purification cycle. First the turbid waters are swirled in oblong concrete tanks; air fed in under pressure mixes them with biologically active sludge. After the biological purification comes the chemical--in radial settling tanks, by means of aluminum sulfate. Then the water is passed through a "flaky pie": half a meter of gravel and over a meter of sand, quartz, brought from under Volgograd.

The construction of the pulp and paper plant and the Selenginsk Pulp and Cardboard Combine in due course attracted the increased attention of the public and the press to Baykal. The anxiety concerning the preservation of the purity of the Baykal waters--exceptionally pure, with little mineralization--was justified. Baykal is unique. In it are concentrated up to 80 percent of the surface fresh waters of our country, or 22 percent of the world resources. A number of decrees were passed by the party and

the government to protect the lake reservoir. The Academy of Sciences drew up a master plan for efficient use of the reservoir's natural resources. A water-conservation zone was established around Baykal, since due to the chopping down of the forest in the vicinity of the lake, there might be a redistribution of the river run-off, shoaling and shrinking of the tributaries, and the disruption of the water regime might entail not only a calamity for the inhabitants of the lake, but also lead to interruptions in the work of the Angarskiy Cascade GES.

Today, the scientists of the Limnological Institute of the Siberian Division of the USSR Academy of Sciences, who are studying the Baykal problem, feel that the plants do not endanger it. Their purification installations constitute a unique system.

In improving the purification even further, the use of the wastes obtained should be improved. Every day, as the result of purification at the pulp and paper plant, residues are left--30-35,000 cubic meters, a great deal of tree bark. So far they are being dumped in rubbish heaps, but after all, with the appropriate chemical processing, valuable preparations could be obtained from them, which would also be applicable for purifying the plant waters and for other purposes. The bark of larch trees is an irreplaceable raw material for the production of rare medicines, which our country now buys abroad.

Baykal's natural resources are being increasingly drawn into the country's economic system, and this is natural: it would be unrealistic and unthinkable to exclude the lake reservoir from the sphere of human economic operations. This work, however, should be given maximum thought, and should not inflict damage. Let us say that the installation of the Amur-Baykal trunkline became for Baykal the construction of an oil base in the south and a transshipment oil storage point in the north.

This year 40,000 tons of petroleum products should be transported. In this case extreme care must be taken to see that all the vessels, not only the tankers, that have accumulated polluted waters in the bottoms do not pump it over board, but turn it over to special storages. In spite of the increase in capacity of the petroleum base, there are no threatening phenomena. Nor will there be any in the north of Baykal, since the system for pumping the petroleum products over from the tankers to the reservoirs has been very carefully thought out.

In accordance with the decree of the party and the government, log drifting along Baykal and its tributaries has been completely stopped. The channels of the Bargruzina and Bugul'deyki rivers and others have been cleared. The problems of the rivers' purity should be constantly monitored. This is especially true of the Selenga, which has major industry along its banks, and also of the Upper Angara, located in the region where the Amur-Baykal trunkline is being installed.

"Our institute, in conjunction with the Baykal and Trans-Baykal basin administrations and the sanitation services, are continually supervising the work of the industrial enterprises in the vicinity of the lake," says Konstantin Konstantinovich Votintsev, deputy director of the Limnological Institute. "Take as an example the Selenginsk Pulp and Cardboard Combine. The Selenga is the largest tributary of Baykal, bringing up to half of the yearly run-off of water into the lake, a tributary in which most of the omul school spawns. Therefore, we cannot help but take into consideration the possible influence of the combine on the Selenga. By 1980, however, this enterprise should be converted to a closed water-utilization cycle."

A considerable portion of the waters, after preliminary purification, is already being drawn into circulation, and the rest is at present being dumped into accumulator-ponds.

Establishing a closed cycle for water use at the Baykal Pulp and Paper Plant is a more complex task: the enterprise has a considerably greater capacity, and converting it to a closed cycle will take place somewhat later--in 1985-1990.

Active work is continuing to improve the purification of the sewage. The Limnological Institute suggested a new purification device--a biological absorber. It is already in operation at a semi-industrial unit and in the next year or two will be introduced at the plant. In addition, the institute proposed that planting reeds be organized on the strip near the shore of Baykal, and the results are available: the waters passed through the reeds are clarified and become pure.

All these protective measures have made it possible to preserve and increase the stocks of the famous Baykal omul. Even during the years of the ban, omul were caught in small amounts, both for purposes of fish breeding (there are two fish breeding plants on Baykal) and to maintain the experimental fishing personnel. Now the time has come when the omul catching veterans have again set to work in full swing.

Several years ago the decision was made to create national parks on the shores of Baykal. There is the very large Barguzin Preserve, within which any economic operations are prohibited.

The organization of several other preserves is now being planned, particularly mineralogical. For example, in the Slyudyanka region, up to several hundred different types of minerals, as well as mica and marble, may be found.

It is proposed that a second mineralogical preserve be organized in the steppe region, not far from Ol'khon Island. An unprecedented variety of minerals has been found there in an area of a few square kilometers. Many of them are described here for the first time, and so far have been encountered nowhere else in the world.

It is proposed that a national park be created on the southeast shore, in the region of the Khamar-Daban range, and another--northwest of Baykal. Tourist facilities, holiday camps and camping grounds are to be constructed there in order to organize tourism in these regions and on the shores of the lake.

Baykal attracts tourists! The number of people visiting Baykal approaches a half million a year. Due to fast ships, it has become accessible at almost any point, even in the north, where access was formerly difficult.

Finally, it would be incorrect to think of the tourist as a destructive agent. Nevertheless, the plan for the national parks specifies definite conditions for the visits of tourists, and outlines the regions designed for visitors, and the regions where access will be restricted.

The service for tourists at Baykal is being improved. Special ships are being designed for lake cruises. A plan to establish a highway around Baykal was rejected. Instead, it was decided to construct radial highways to individual sections of the shores.

The construction of health resort institutions is planned. So far there are two small resorts--at central and northern Baykal. They will be developed along with the construction of new ones, for a study of the microclimatic conditions in the lake region makes it possible to develop this work on a broad scale. There are many mineral springs here, including some right on the shores. There are just as many sunny days on Baykal as in the Crimea or the Caucasus.

The area of the old railroad (the Trans-Siberian Railroad is now straightened out in this area) has been set aside for hunting, but the shooting of animals will have certain restrictions on it. There are wild animals there: Manchurian deer, goats, woodgrouse and the lairs of bears are found.

With the construction of the Amur-Baykal trunkline, the flow of tourists will increase still further, and there will be room for everyone at the lake. The "pearl of Siberia" serves man--for both work and recreation.

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CSO: 5000

FRANCE

EXPLOSION IN LYONS SUBURBS TRACED TO ACROLEIN

Paris L'UNITE in French 25 Feb 77 p 31

[Excerpt] Is an incident like the one in Seveso [Italy] possible in France? The "incident" that took place last 19 December in a factory owned by the Pechiney-Ugine-Kuhlmann at Pierre-Benite in the suburbs of Lyons makes it believable. A few drops of salt water were sufficient to cause 5 tons of acrolein to explode and catch fire immediately. Miraculously, no one was hurt. This warning was not apparently sufficient, however. After a 50-hour interruption, the production of acrolein was resumed. This was done on the order of the Rhone prefect who considered the few modifications of the plant sufficient to allow it to resume operations. This was not the opinion of the workers who for 3 days refused to go back to work as a protest against the lack of safety measures.

There is, actually, some cause for alarm. According to the CFDT [French Democratic Confederation of Labor] local, "5 tons of acrolein in the atmosphere are sufficient to provide a fatal dose in 1 million square meters up to an altitude of 20 meters." Another such "incident" bears witness to the toxicity of this product: on 11 July 1976, 20 tons of acrolein was spilled into the Rhone River with the result that 365 tons of fish were killed.

CSO: 5000

GREECE

LIQUIFIED GAS COMBUSTION IN CARS SEEN DECREASING POLLUTION

Athens TA NEA in Greek 12 Jan 77 p 3

[Article by Giorgos Kondovas]

[Text] Necessity knows no laws.

During the occupation, we had "gazozen" automobiles. They ran on water and sawdust (or coal). Now that gasoline is becoming more and more expensive, we have cars which run on liquified gas.

There are already among us some 300 cars on the road--both taxis and private vehicles--which instead of very expensive gasoline are burning common liquified gas, the same fuel that housewives use in the kitchen.

Kharalambos Restis has worked a miracle, through the addition of a small attachment onto the engine of an automobile. Such a motor runs on either gasoline or liquified gas.

Wine Sold Here

He himself calls his original workshop, which is located somewhere near Treis Gefyres, the "Workshop for Liquified Gas Adjustments and Tests on Gasoline Engine Performance."

It is a large, single-story building, with a huge bottle on the roof. On the front is the sign: "Petrogaz Station." At the back, on the large iron door, is another sign: "Wine Sold Here."

A camouflage, presumably borrowed from the Prohibition era. The use of liquified gas in place of gasoline is forbidden. Legislative Decree 550 and Provision 48/41 of the Traffic Code stipulate that any change in the basic characteristics of automobiles is unlawful.

Gasoline as a fuel is considered to be a basic characteristic. But Mr Restis maintains that he is not breaking the law:

"I am not changing any basic characteristic. I am not converting the motor, I am not doing away with gasoline. I am simply making it possible for motors to burn liquified gas as well. Thus, you never have to run out of fuel, and at the same time the class of taxi-cab drivers, who have frequently been on strike, can get some kind of economic relief.

"Furthermore, cars which burn liquified gas do not pollute the atmosphere and do not damage the [Parthenon's] Caryatids. Are these things of small importance?"

No Labor Involved

"Mr Restis, for how long have you been at this labor?"

"What labor, my dear reporter? I wanted to do it. I ran tests. As I told you: I have a workshop for adjustments with regard to the performance of gasoline engines. I have been experimenting with liquified gas for 30 years. I also have a bottling permit. After racking my brains, I came up with this invention. But instead of encomiums and honors, I am compelled to hide, and my customers have to live in a state of fearfulness."

"Are you being prosecuted by the law?"

"I wish I knew. In any case, no official has come around and bothered me, nor has any official come to ask me about the benefits which result from the use of liquified gas instead of gasoline."

Savings of 50 Percent

"What, exactly, are these advantages?"

"Those vehicles which have 8-12 horsepower have a savings of 40 percent with liquified gas. From 16 horsepower on up, the savings are even greater. They possibly even exceed 50 percent. There are also savings on oil, on points, and on spark plugs, and the car does not require maintenance so frequently. As for the atmosphere, every problem is done away with. There is an end to exhaust gases. No matter how much one steps on the pedal, liquified gas does not leave exhaust fumes. An end to pollution. An end to cancer. An end also to the oil sheiks and the crisis in the Middle East."

An Accessory

"How exactly is the conversion done?"

"But I told you. It is not a matter of a conversion. It is a question of an addition. Installed in the combustion cycle is a lung vaporizer

which converts the liquified gas into gaseous form, and this is conducted to the carburetor. By the aid of an electric valve for the liquified gas, the desired conversion of the fuel, both for the vehicle in motion and when it is stopped, is achieved."

"Is liquified gas at all dangerous?"

"No more so than the liquid gas in cigarette lighters. The bottle has two safety valves, and in case of a break in the feed pipes, the discharge of liquified gas is automatically stopped. That is, the safety factor is 100 percent.

"For example, if the car falls over a cliff, the only thing which will emerge intact from the wreckage will be the fuel bottle. None of the cars which are on the road here on a trial basis has ever shown the least trouble."

"Danger of Explosion"

But it seems that the special study group which was formed a year ago by the ministries of transport and commerce for the purpose of studying the subject "liquified gas in automobiles" does not agree with this point of view. This committee was made up of chemical engineers and other experts, who reached the following conclusions:

Because of the country's climatological conditions--a dry atmosphere--there is a danger of an explosion in case of a crash. A like danger will exist for gas stations which have underground tanks below apartment buildings.

The transport of liquified gas from abroad is an additional unfavorable aspect--and practically impossible--because the suitable technical and port facilities which should exist for the unloading of the gas at special piers do not in fact exist.

These findings of the study were submitted for the consideration of Mr Papaligouras and Mr Vogiatzis, and the matter was closed for the time being.

"It has been closed only temporarily," says Mr Restis. "The newspapers are writing about a new price increase for gasoline, and the taxi-cab drivers will be recommencing their strikes."

Almost all the car drivers who are customers of Mr Restis have at various times been identified by the traffic police and have been brought to Kholargos. A fine of 500-1,000 drachmas is imposed on them for violating the Traffic Code. But these people remain steadfast:

"What is such a fine in comparison to the great advantage which we enjoy?"

Restis speaks about "hidden" organized interests which are hindering the propagation of his invention, while official reports confirm to us that "liquified gas cars" are to be found more and more frequently on the roads of Italy, Germany, Denmark, Sweden, and in the eastern countries.

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SWEDEN

TWO NUCLEAR PLANTS REQUIRED IN 1985

Stockholm DAGENS NYHETER in Swedish 9 Feb 77 p 7

[Article by Bo Melander]

[Text] In 1985 environmental protection devices in the Swedish industry will require the energy produced by two nuclear plants or four Norrland rivers, Bo Helmerson, a manager from the Industrial Association, said at a conference on environmental protection on Tuesday. He also indicated that the government declaration supports the philosophy of economic growth. And then more energy is needed, Helmerson said. The energy costs of environmental protection are negligible, claimed Arne Hansson, department manager at the Environmental Protection Agency, when he appeared at the conference which was organized by the Institute for Water and Air Protection.

Helmerson added up the energy costs for environmental protection both inside and outside the factories. Energy needs for protection of the interior working environment and the exterior surroundings would by 1985 require 23 tera-watt hours, according to Helmerson. This is the equivalent of the energy put out by two nuclear reactors.

Four rivers then constitute a sacrifice we will have to make. Or we will have to use uranium. It is a moral question whether we should let the Poles mine 5 tons of pit coal so that we can have the energy equivalent of 1 ton shale, Helmerson said.

He also said that there is a connection between the increase of energy consumption and the increase in the gross national product: The idea of increase is inherent in the government declaration, and if we want an increase we need more energy.

According to Helmerson, atomic energy is the most responsible way of producing electricity. With regard to the alternate sources of energy he said: We know little about how much energy the alternate sources can give and what environmental damages energy forests and windpower stations cause when used on a large scale.

Little Energy

Arne Hansson, head of the Environmental Protection Agency, warned participants against adopting Helmersson's position on environmental protection, saying: Without pump stations and sewers factories would drown. Without fans employees would get poisoned. Tall chimneys are necessary for the protection of those living in the surrounding area.

A large amount of waste must be removed from the industrial area in order to keep the plants operating. The use of energy for these purposes does not belong in the calculations for environmental protection.

And Hansson's analysis was completely different from that of Helmersson: Energy costs for environmental protection measures are surprising low. We are talking about fractions of a percent of the market value of industrial products.

Environmental protection demands probably have not increased the consumption of energy at all.

Summing matters up Hansson said: We will not reduce our zeal in pursuing an active environmental protection policy.

Local Energy

Under Secretary of State Kerstin Aner opened the conference by talking about the environmental problems of the various sources of energy. During the debate on alternate sources of energy she also attacked the idea of large-scale production, saying: Energy forests make no sense unless they are combined with agriculture and manpower in the same area. The same is true about windpower; its purpose is as local as the wind itself and should also be used in combination with solar heat and other local systems of production, in order to serve an energy consumption which changes but does not lower the standard of living.

Aner also said that it is impossible to make a fair comparison between the local, self-replenishing sources of energy and the large, concentrated sources of energy like nuclear, oil and water energy, if the alternate sources are not given the opportunity to develop on their own terms.

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SWEDEN

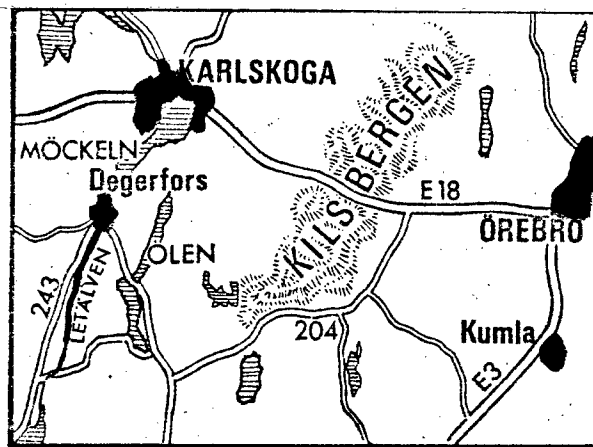
LIMESTONE POWDER BENEFICIAL TO POLLUTED LAKES

Stockholm DAGENS NYHETER in Swedish 12 Feb 77 p 32

[Article by Bo Engzell]

[Text] Limestone guns throwing out 20 tons of limestone powder per hour can save thousands of Swedish lakes which are threatened by sulphur poisoning when the spring floods start.

This is the report from the largest experimental project so far in Sweden, which has been conducted in the area of Kilsbergen between Orebro and Karlskoga. There an exceptional fishing lake, Olen, has been saved from acidification and consequent sterility. By the help of limestone guns the lake's pH has been raised from 4.0 to 7.5.



This is a very good figure, which reflects the improved living conditions of the fish formerly threatened with extinction, fisheries expert Torbjorn Sjostrom told DAGENS NYHETER.

We also hope to be able to eliminate the mercury impurities in the lakes through this limestone powder, he says.

The acidification of Swedish lakes has been going on for many years. Sulphur impurities are drifting in over Sweden from the continent and we are responsible for just as much acidification of the environment ourselves.

However, this winter the situation is much worse than usual in the middle region of Sweden, where the snow cover is the thickest in over 10 years. The snow threatens to kill thousands of lakes by shock or at least destroy them once the spring floods start.

For the snow contains great amounts of sulphur impurities, which during the great melting period will turn into sulphuric acid. This acid will lower the pH in a shocklike manner so that the fish, especially the young fry, will die. The lakes will get greater amounts of sulphur than they can manage during such a short period of time.

"Acid in Snow"

pH figures as low as 3.5, which indicates almost pure acid, have been found in the snow in the province of Orebro this winter. This is alarming, especially when one considers the great amounts of snow which the winter brought, fisheries expert Sjostrom says. Many lakes can not manage such amounts of sulphur. The only way to save the lakes is by the help of limestone powder guns or by the help of airplanes which would spread the limestone powder over the ice-covered lakes. The limestone can neutralize the sulphur acid and raise the pH of the water again so that both lakes and fish can survive.

But this process of spreading limestone powder is very expensive. Estimates of 20 million kronor for the province of Orebro alone have been registered. Due to the fact that this province has lime deficient bed-rock, it, along with some lakes by the west coast and in Bergslagen, is subject to the worst conditions in Sweden. Lakes in areas where the bed-rock provides lime naturally have more resistance to the sulphur.

Ten Million in Subsidies

The government has approved 10 million kronor for the entire country to subsidize experimental limestone treatments this year and the same amount has been approved for each of the coming four years. This year's money is not sufficient; it is probably only enough for a few projects and some experiments.

The situation is alarming in spite of the fact that our output of sulphur in the long run will be reduced through a lowered sulphur content in the fuel oil, says Ingvar Hallberg, environmental protectionist from Orebro. Radical measures must be implemented quickly. A third of the country's lakes which need to be treated with limestone powder are located in the Province of Orebro.

Of the nearly 2,000 lakes in the province of Orebro, approximately 1,500 must be treated with limestone powder in order to be saved, says fisheries expert Sjostrom.

Many lakes, especially the smaller ones, die in silence, says Nils Christiansson, forest officer at the Villingsberg forestry reserve.

The National Employment Agency is sponsoring Sweden's largest experimental project for limestone treatment of lakes. Olen in Kilsbergen, between Orebro and Karlskoga, is a test lake. Olen measures 1,013 acres and has a maximum depth of 22 meters. So far 2,400 tons of limestone powder at a cost of 600,000 Swedish kronor have been thrown into it. This limestone treatment is not limited to the lake; streams in the surrounding area, from which especially acid water runs into the lake, are also treated with limestone.

Previously the lake had a pH of just above 4. Certain streams had an even lower pH. The normal pH is 7. At a figure below 5.5 the roach, which is the staple food for many other fish, cannot survive. Below 5 the char and the salmon trout die. Good fishing-waters should have the normal pH of 7.

Positive Results

The limestone experiments with Olen have been going on for a year under the auspices of the National Employment Agency; before that the angling club of Degerfors had been limestoning the lake on a smaller scale.

As a result the lake now has a pH as high as 7.5, in other words a very good figure.

The results are very positive. A stream whose pH used to be 4 shows an increase as high as 8.5 after limestone powder treatment, Sjostrom says. It is very good when the lake is supplied by a water source such as this.

This experimental project thus shows that the effects of the raised pH are very favorable.

We have even been able to ascertain that the crayfish fry in the lake have increased markedly and that is a good sign, Sjostrom says. The limestone may also be able to counteract the parasitic mold which attacks crayfish. A fine stock of salmon trout, which previously was threatened by extinction, has also been saved in Olen.

Certain signs also indicate that Olen, which used to be black-listed as a mercury-polluted lake, will also recover from that infliction. The dangerous mercury probably settles as a sediment through the added limestone and will also evaporate into the air.

So far the Olen experiment has cost 700,000 kronor. But we have added more limestone than is really necessary, Sjostrom says. A regular limestone powder treatment of a lake can be much less expensive per acre.

The limstoning does not affect the fish exclusively; it affects nature in its entirety.

Responsibilities of Local Authorities

The present subsidies for limestone treatment of the lakes in the country are only enough for a small list of high priority lakes, a list which the National Fisheries Board will be ultimately responsible for. Some of the most urgent project involve certain finer fishing-waters in Kilsbergen, for example, some lakes in central Tiveden, among others the big char lake Unden, and in Bergslagen at Tallefors, where one of the country's finest stock of salmon trout, the Brunnshytte trout, spawn.

But it is generally hoped that the local authorities, not just the central government, will realize the value of saving the streams in their immediate surroundings.

Lakes and streams are becoming increasingly important for recreation and leisure, says Helge Blomkvist from the Swedish National Organization of Amateur Fishermen. Two million Swedes now go fishing at least once every year and the number is increasing. This is another reason why we must save our waters.

The sulphur fallout over Sweden is an acute threat to our environment. The acidification of our streams has gone so far that thousands of lakes will, with the next decade or so, become void of fish.

This is what the National Organization of Environmental Protection Groups (MIGRI) maintained, as it paid a visit last Friday to the secretary of agriculture, Anders Dahlgren (from the Center Party). This national organization also points out that the subsidies for limestone treatment of our streams and lakes (10 million kronor during 5 years) are insufficient. Approximately 200 million kronor are needed.

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